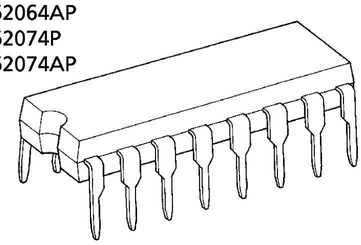
TOSHIBA BIPOLAR DIGITAL INTEGRATED CIRCUIT SILICON MONOLITHIC

TD62064P, TD62064AP, TD62064F, TD62064AF TD62074P, TD62074AP, TD62074F, TD62074AF

4CH HIGH-CURRENT DARLINGTON SINK DRIVER

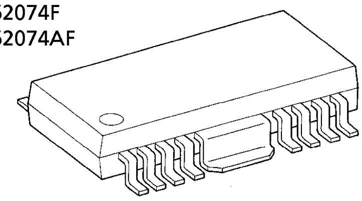
The TD62064P / AP / F / AF and TD62074P / AP / F / AF are high-voltage, high-current darlington drivers comprised of four NPN darlington pairs.
All units feature integral clamp diodes for switching inductive loads and all units of TD62074P / AP / F / AF feature uncommitted collectors and emitters for isolated darlington applications.
For proper operation, the substrate (SUB) must be connected to the most negative voltage.
Applications include relay, hammer, lamp and stepping moter drivers.

TD62064P
TD62064AP
TD62074P
TD62074AP



DIP16-P-300-2.54A

TD62064F
TD62064AF
TD62074F
TD62074AF



HSOP16-P-300-1.00

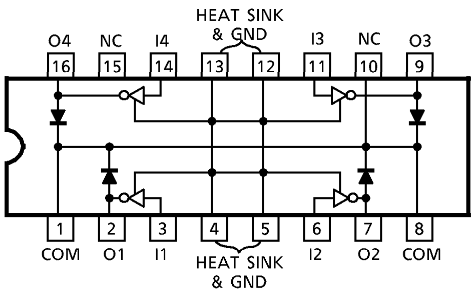
Weight
DIP16-P-300-2.54A : 1.11g (Typ.)
HSOP16-P-300-1.00 : 0.50g (Typ.)

FEATURES

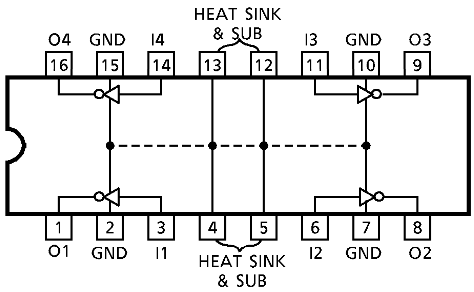
- Output current (single output) 1.5A (Max.)
- High sustaining voltage output
  35V (Min.) (TD62064P / F, 074P / F)
  50V (Min.) (TD62064AP / AF, 074AP / AF)
- Output clamp diodes : TD62064P / AP / F / AF
- Isolated darlington array : TD62074P / AP / F / AF
- Input compatible with TTL and 5V CMOS
- GND and SUB terminal = heat sink
- Package type-P, AP : DIP-16pin
- Package type-F, AF : HSOP-16pin

PIN CONNECTION (TOP VIEW)

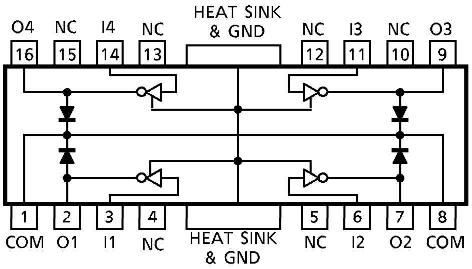
TD62064P / AP



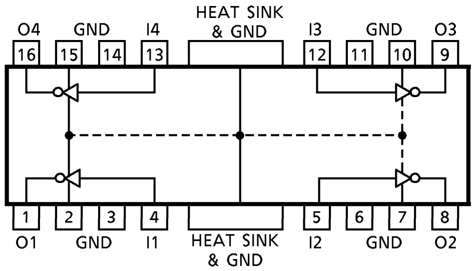
TD62074P / AP



TD62064F / AF

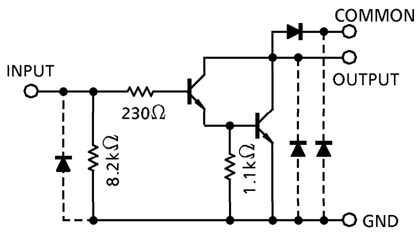


TD62074F / AF

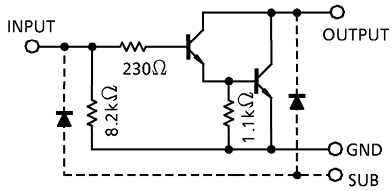


SCHEMATICS (EACH DRIVER)

TD62064P / AP / F / AF



TD62074P / AP / F / AF



(Note) The input and output parasitic diodes cannot be used as clamp diodes.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Sustaining Voltage	P, F	$V_{CE (SUS)}$	−0.5~35	V
	AP, AF		−0.5~50	
Output Current		I_{OUT}	1.5	A / ch
Input Current		I_{IN}	50	mA
Input Voltage		V_{IN}	−0.5~17	V
Clamp Diode Reverse Voltage	P, F	V_R (Note 1)	35	V
	AP, AF		50	
Clamp Diode Forward Current		I_F (Note 1)	1.5	A / ch
Isolated Voltage	P, F	V_{SUB} (Note 2)	35	V
	AP, AF		50	
Power Dissipation	P, AP	P_D	1.47 / 2.7 (Note 3)	W
	F, AF		0.9 / 1.4 (Note 4)	
Operating Temperature		T_{opr}	−40~85	°C
Storage Temperature		T_{stg}	−55~150	°C

(Note 1) TD62064P / AP / F / AF
(Note 2) TD62074P / AP / F / AF
(Note 3) On Glass Epoxy (50 × 50 × 1.6mm Cu 50%)
(Note 4) On Glass Epoxy (60 × 30 × 1.6mm Cu 30%)

RECOMMENDED OPERATING CONDITIONS (Ta = −40~85°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Sustaining Voltage	P, F	$V_{CE\ (SUS)}$			0	—	35	V
	AP, AF				0	—	50	
Output Current		I_{OUT}	DC1 Circuit, Ta = 25°C		0	—	1250	mA / ch
	P, AP (Note 1)		T_{pw} = 25ms 4 Circuits T_j = 120°C Ta = 85°C	Duty = 10%	0	—	1250	
				Duty = 50%	0	—	390	
	F, AF (Note 2)			Duty = 10%	0	—	907	
				Duty = 50%	0	—	172	
Input Voltage		V_{IN}			0	—	8	V
	(Output On)	$V_{IN\ (ON)}$	I_{OUT} = 1.25A		2.5	—	8	V
	(Output Off)	$V_{IN\ (OFF)}$			0	—	0.4	V
Input Current		I_{IN}			0	—	20	mA
Clamp Diode Reverse Voltage	P, F	V_R	TD62064P / AP / F / AF		0	—	35	V
	AP, AF				0	—	50	
Clamp Diode Forward Current		I_F			—	—	1.25	A
Isolation Voltage	P, F	V_{SUB}	TD62074P / AP / F / AF		—	—	35	V
	AP, AF				—	—	50	
Power Dissipation	P, AP	P_D	Ta = 85°C (Note 1)		—	—	1.4	W
	F, AF		Ta = 85°C (Note 2)		—	—	0.7	

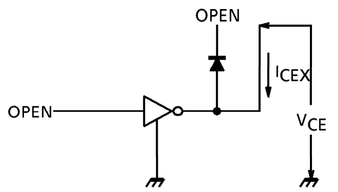
(Note 1) On Glass Epoxy (50 × 50 × 1.6mm Cu 50%)
(Note 2) On Glass Epoxy (60 × 30 × 1.6mm Cu 30%)

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

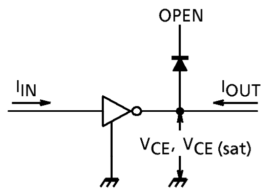
CHARACTERISTIC		SYMBOL	TEST CIRCUIT	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Leakage Current	AP, AF	I_{CEX}	1	V_{CE} = 50V, Ta = 25°C		—	—	50	μA
				V_{CE} = 50V, Ta = 85°C		—	—	500	
	P, F			V_{CE} = 35V, Ta = 25°C		—	—	50	
				V_{CE} = 35V, Ta = 85°C		—	—	500	
Collector-Emitter Saturation Voltage		$V_{CE\ (sat)}$	2	I_{OUT} = 1.25A, I_{IN} = 2mA		—	—	1.6	V
				I_{OUT} = 0.75A, I_{IN} = 935μA		—	—	1.25	
DC Current Transfer Ratio		h_{FE}	2	V_{CE} = 2V	I_{OUT} = 1.0A	—	800	—	
					I_{OUT} = 0.25A	—	1500	—	
Input Voltage (Output On)		$V_{IN\ (ON)}$	3	I_{OUT} = 1.25A, I_{IN} = 2mA		—	—	2.4	V
Clamp Diode Leakage Current	AP, AF	I_R	4	V_R = 50V, Ta = 25°C		—	—	50	μA
				V_R = 50V, Ta = 85°C		—	—	100	
	F			V_R = 35V, Ta = 25°C		—	—	50	
				V_R = 35V, Ta = 85°C		—	—	100	
Clamp Diode Forward Voltage		V_F	5	I_F = 1.25A		—	—	2	V
Input Capacitance		C_{IN}	6	V_{IN} = 0V, f = 1MHz		—	15	—	pF
Turn-On Delay	P, F	t_{ON}	7	C_L = 15pF	V_{OUT} = 35V, R_L = 29Ω	—	0.1	—	μs
	AP, AF				V_{OUT} = 50V, R_L = 42Ω				
Turn-Off Delay	P, F	t_{OFF}			V_{OUT} = 35V, R_L = 29Ω	—	1.0	—	
	AP, AF				V_{OUT} = 50V, R_L = 42Ω				

TEST CIRCUIT

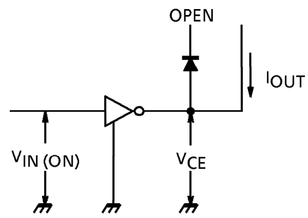
1. I_{CEX}



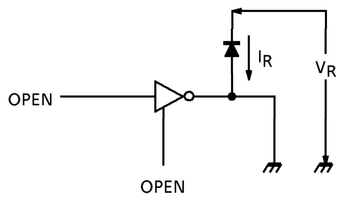
2. $V_{CE\ (sat)}$, h_{FE}



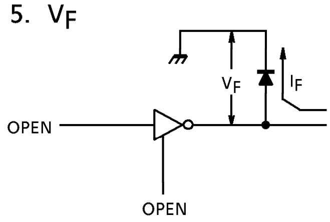
3. $V_{IN\ (ON)}$



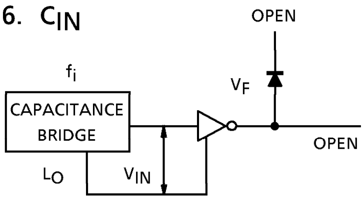
4. I_R



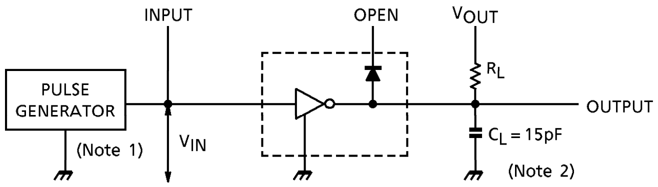
5. V_F

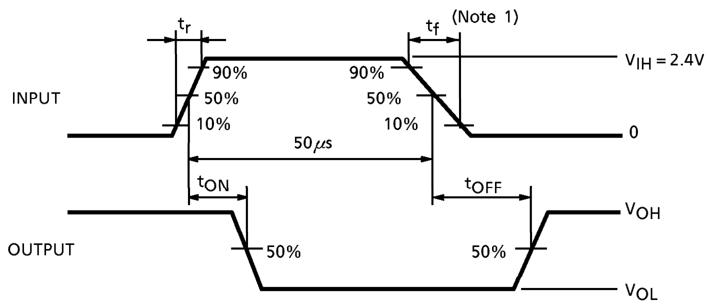


6. C_{IN}



7. t_{ON}, t_{OFF}



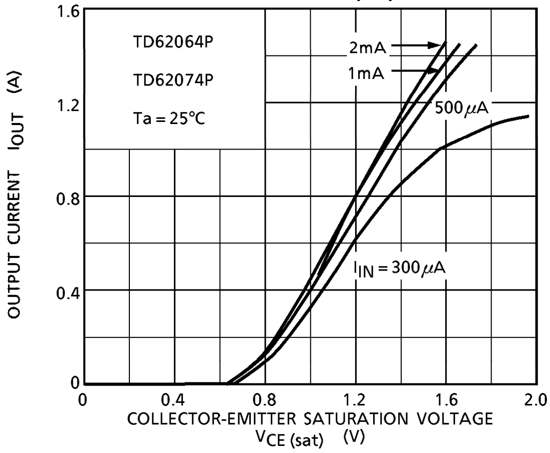


(Note 1) Pulse Width 50μs, Duty Cycle 10%
Output Impedance 50Ω, $t_r \leqq 5ns$, $t_f \leqq 10ns$
(Note 2) C_L includes probe and jig capacitance

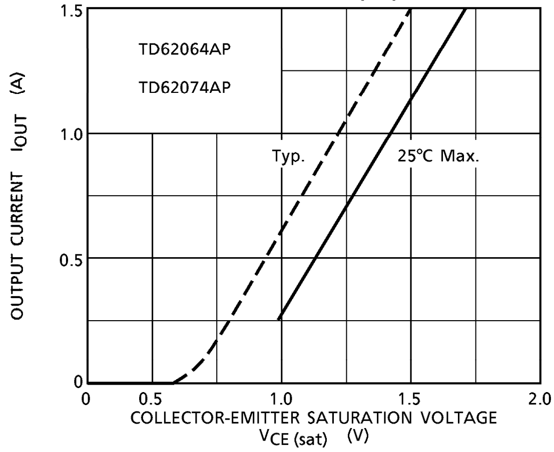
PRECAUTIONS for USING

Utmost care is necessary in the design of the output line, COMMON and GND line since IC may be destroyed due to short-circuit between outputs, air contamination fault, or fault by improper grounding.

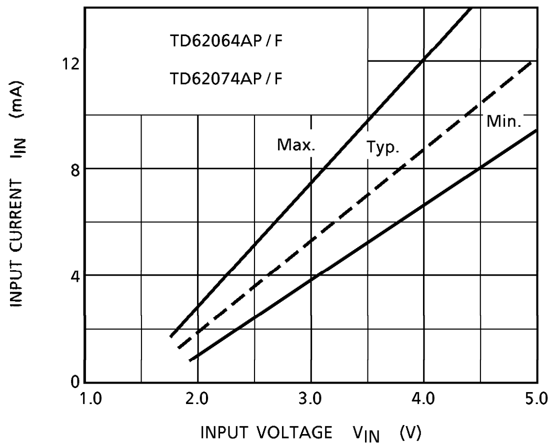
I_{OUT} – $V_{CE\,(sat)}$



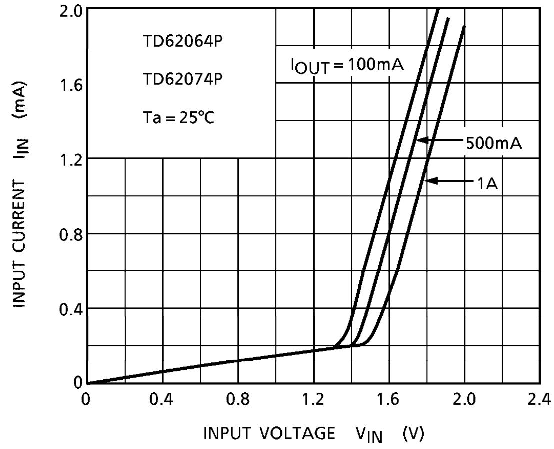
I_{OUT} – $V_{CE\,(sat)}$



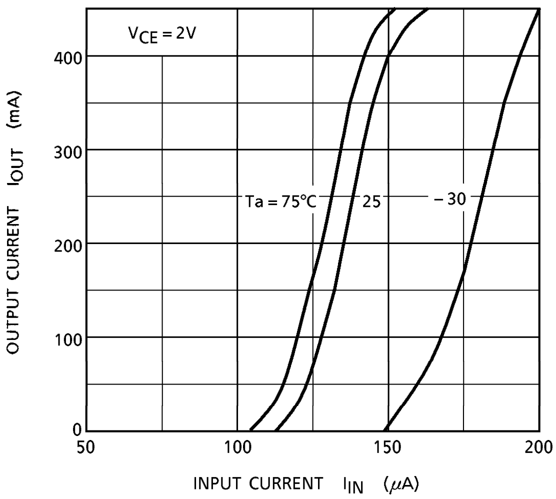
I_{IN} – V_{IN}



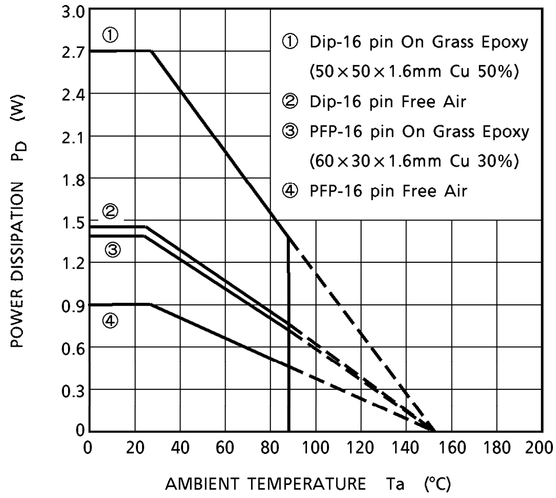
I_{IN} – V_{IN}



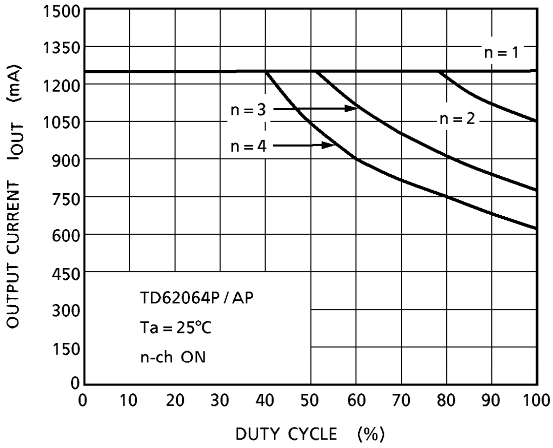
I_{OUT} – I_{IN}



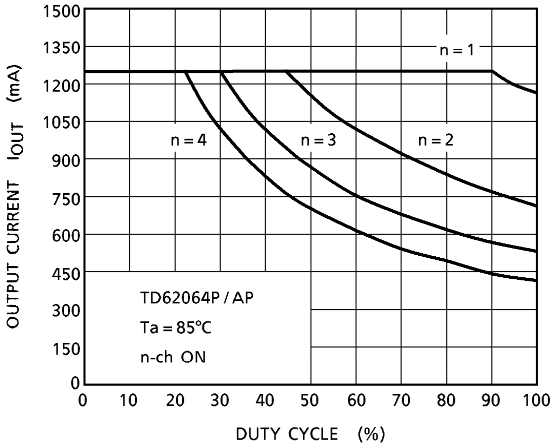
P_D – T_a



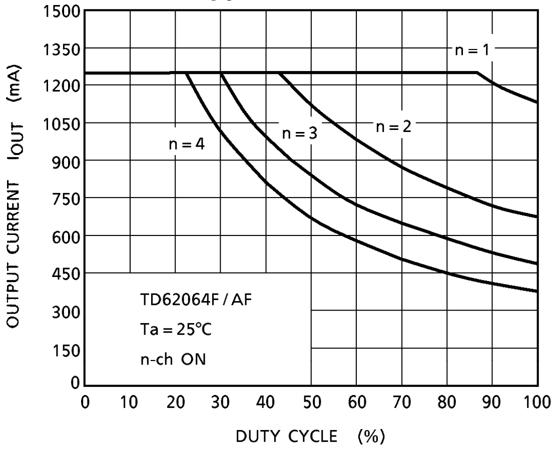
I_{OUT} – DUTY CYCLE



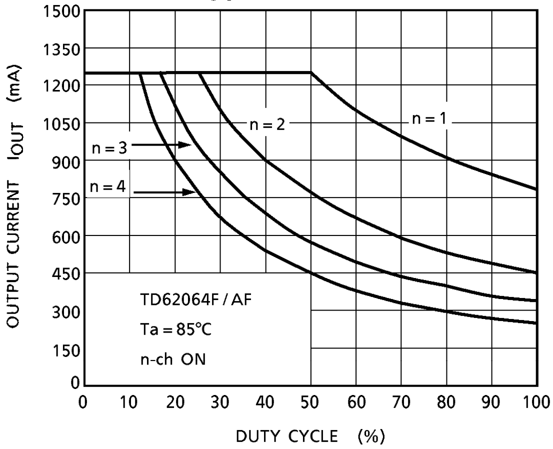
I_{OUT} – DUTY CYCLE



I_{OUT} – DUTY CYCLE

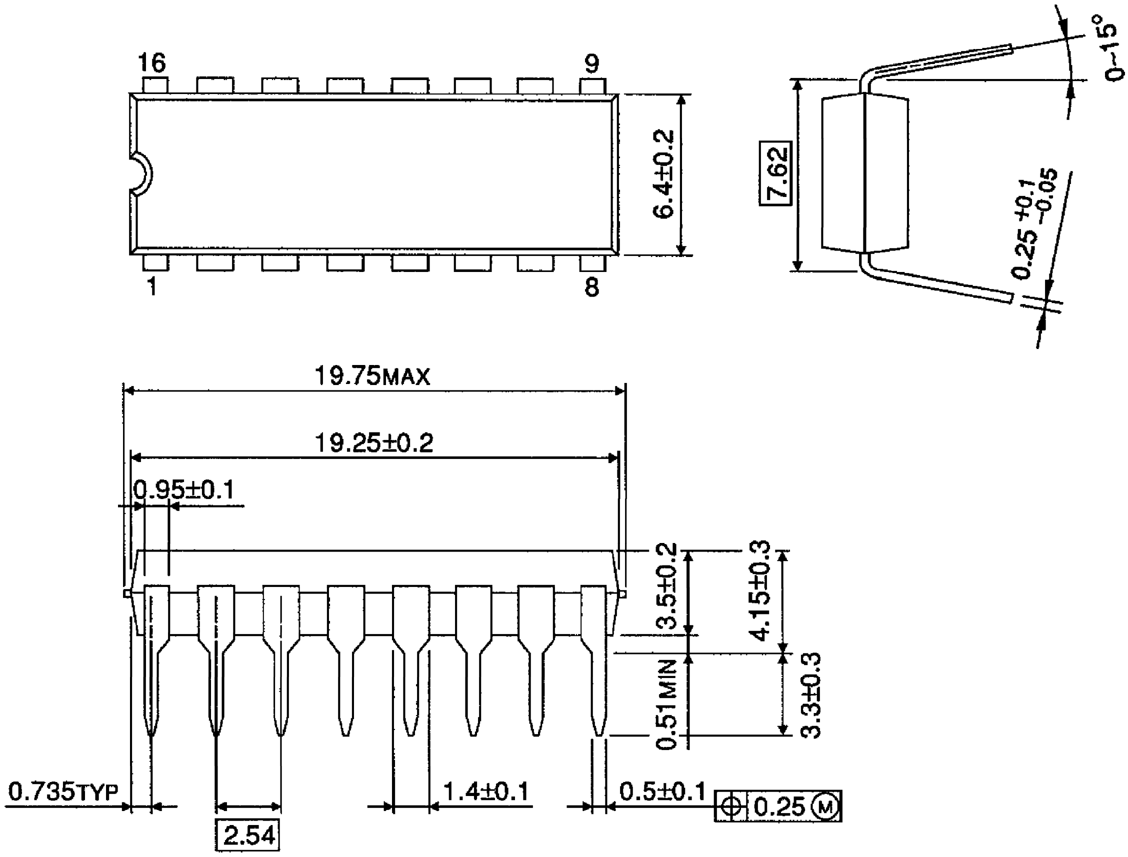


I_{OUT} – DUTY CYCLE



OUTLINE DRAWING

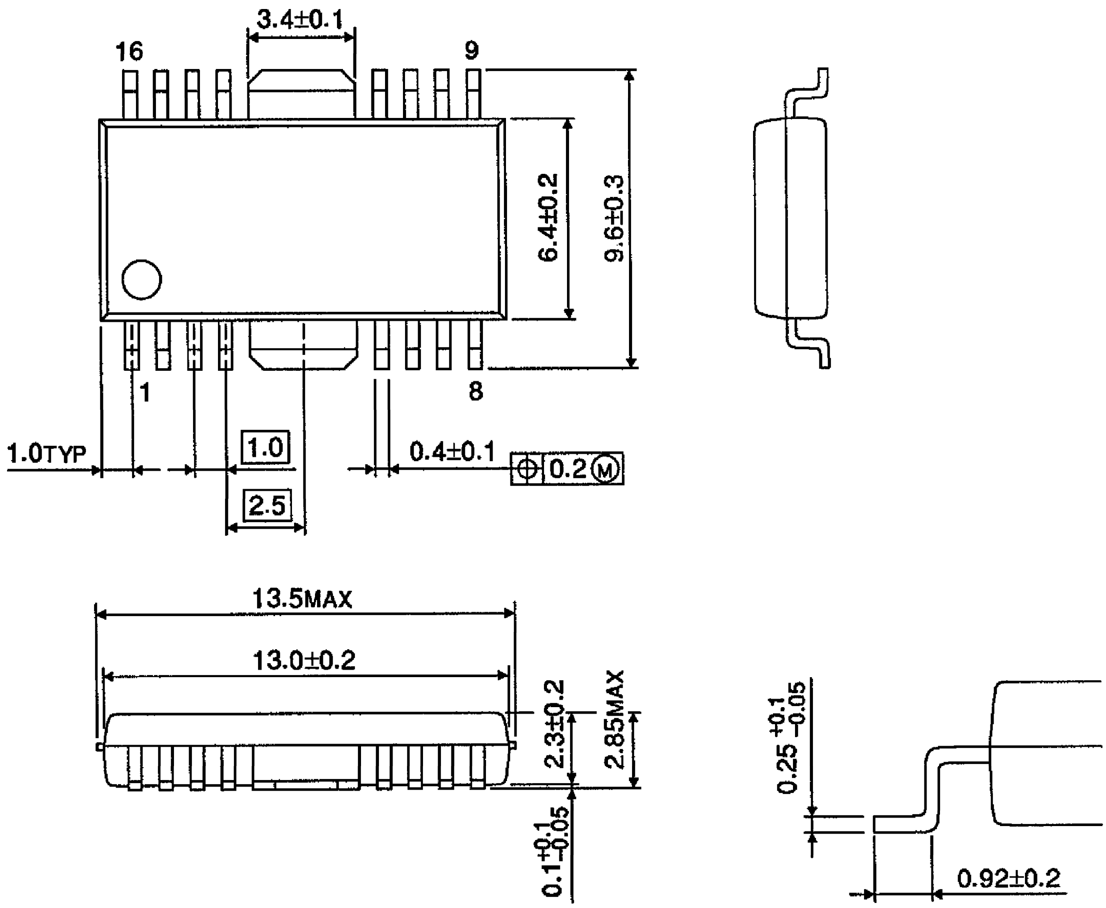
DIP16-P-300-2.54A Unit : mm



Weight : 1.11g (Typ.)

OUTLINE DRAWING

HSOP16-P-300-1.00 Unit : mm



Weight : 0.50g (Typ.)